Appendix B
Meteorological Data

This section contains meteorological data derived from various regulatory and non-regulatory sites. The data provides a comparative analysis of winds speed, wind direction, wind gusts and concentration data. Please note that meteorological instruments measure at different heights, and at different time intervals. By taking, the actual time of measurement and assuring that all data represented is in Pacific Standard Time (PST) there is uniformity of the data. In addition, not all stations measure at the exact same time, i.e. measurements at 053 and 056 therefore, comparisons are measurements within a 60-minute period. While there may be some overlapping and slight differences the comparative analysis provides the reader with a better understanding of the regional effect of the Exceptional Event.

FIGURE B-1
POTENTIAL METEOROLOGICAL AND AIR QUALITY SITES USED IN EXCEPTIONAL EVENT DOCUMENTS

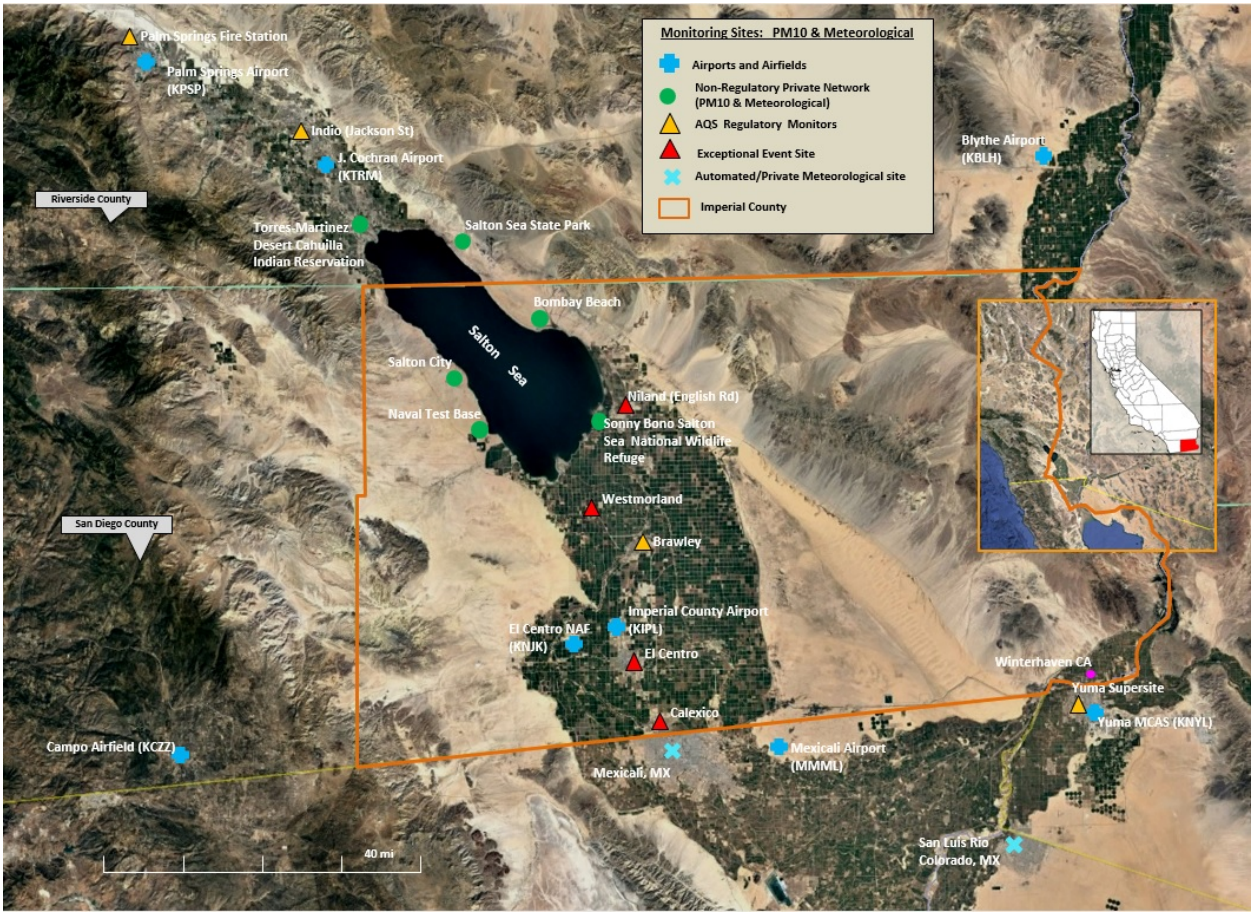


Fig. B-1: A collection of all possible meteorological sites from which the ICAPCD may access meteorological data. Base map from Google Earth.

IMPERIAL COUNTY SITES
FIGURES B-2 THROUGH B-9

FIGURE B-2
IMPERIAL COUNTRY AIRPORT (KIPL)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

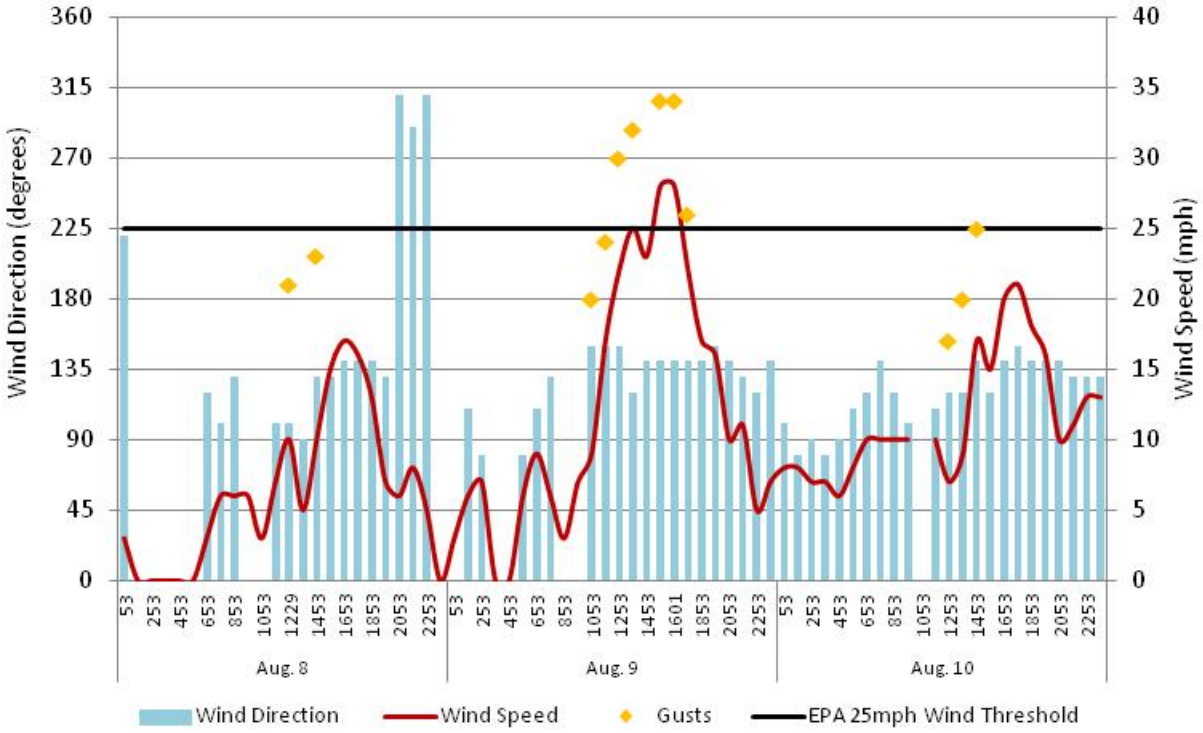
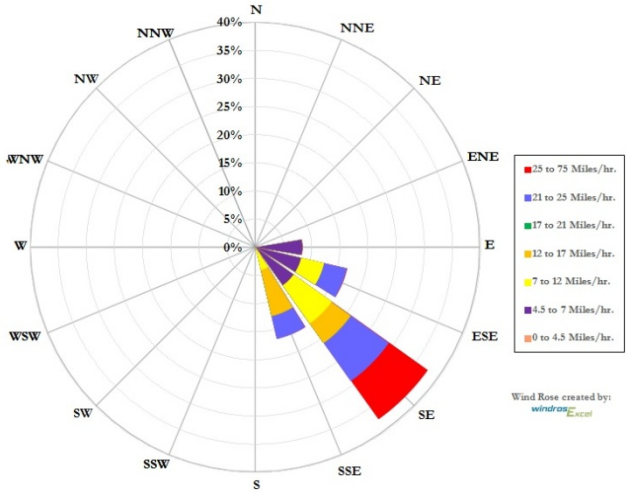


FIGURE B-3
IMPERIAL COUNTRY AIRPORT (KIPL) WIND ROSE – AUGUST 9



Figs. B-2 & B-3: Imperial Airport meteorological data for August 9 shows that southeast winds were over 25 mph. Wind data from the NCEI's QCLCD system.

FIGURE B-4
EL CENTRO NAF (KNJK)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

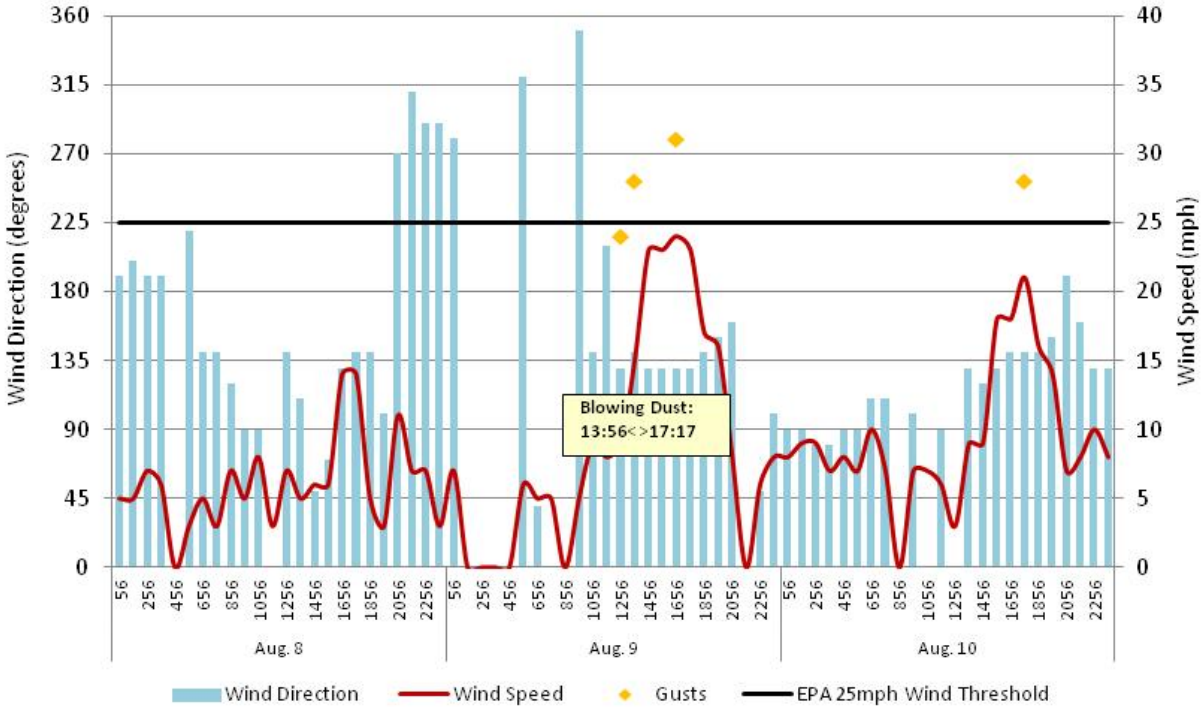
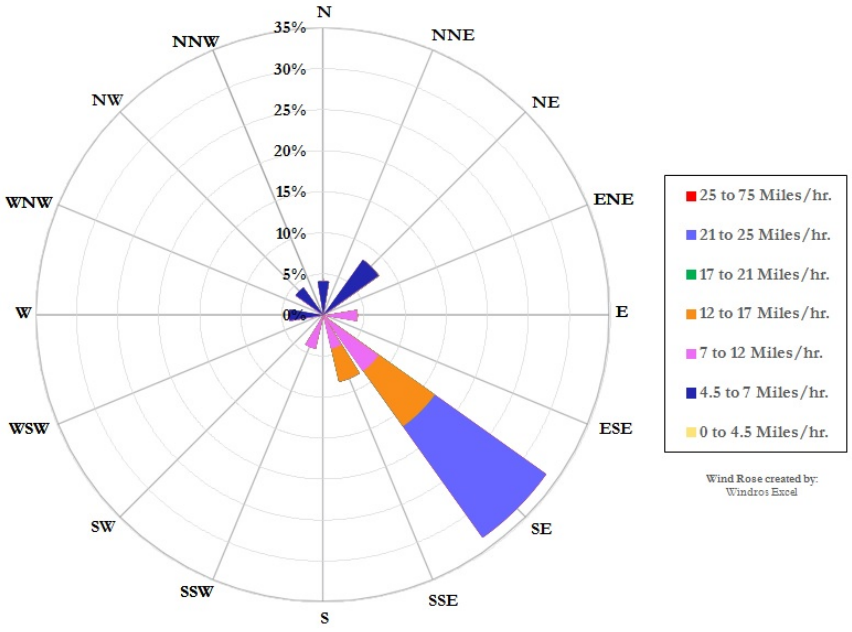


FIGURE B-5
EL CENTRO NAF (KNJK) WIND ROSE – AUGUST 9



Figs. B-4 & B-5: El Centro NAF meteorological data for August 9 shows that southeast winds were just under 25 mph. Wind data from the NCEI's QCLCD system.

FIGURE B-6
CALEXICO
WIND SPEED & DIRECTION

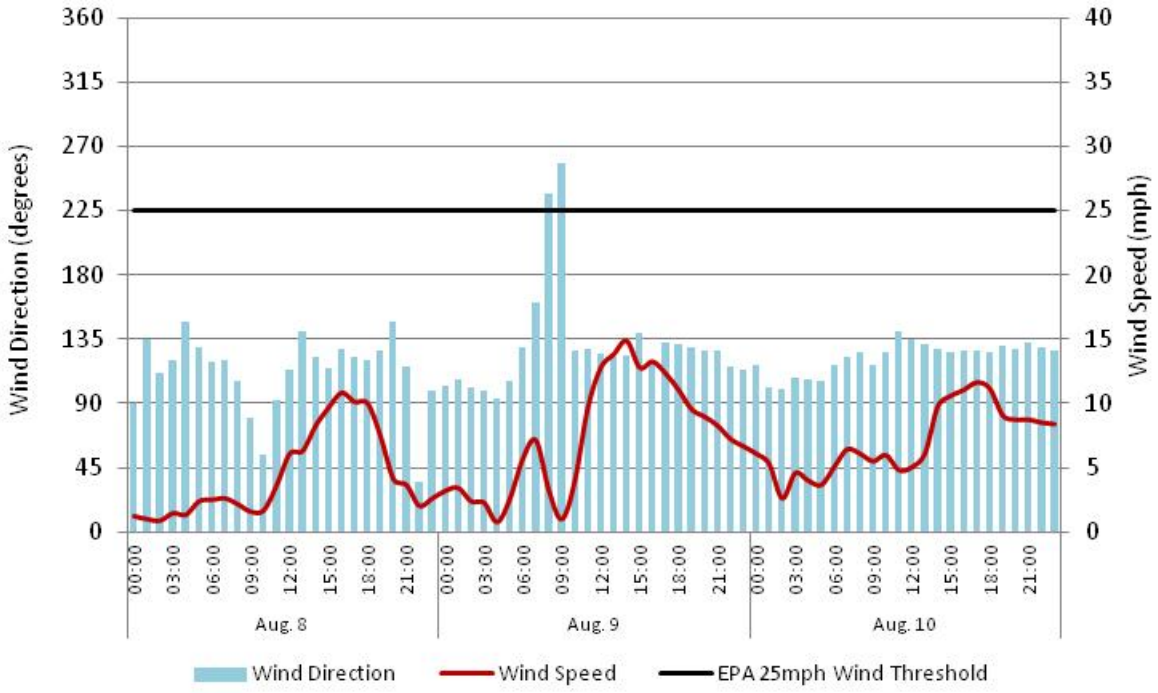
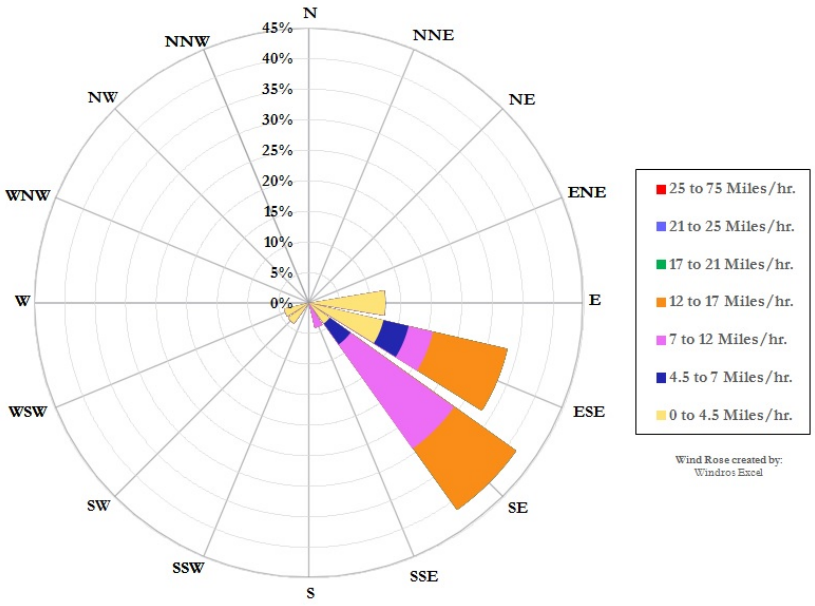
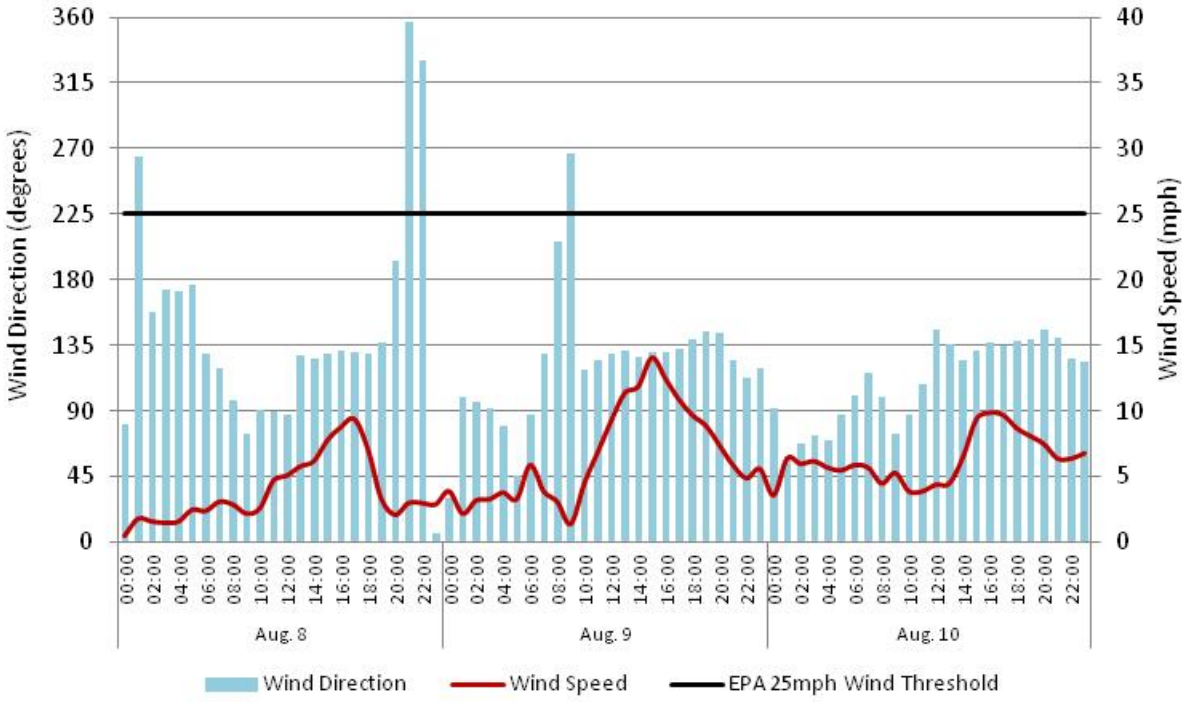


FIGURE B-7
CALEXICO WINDROSE – AUGUST 9

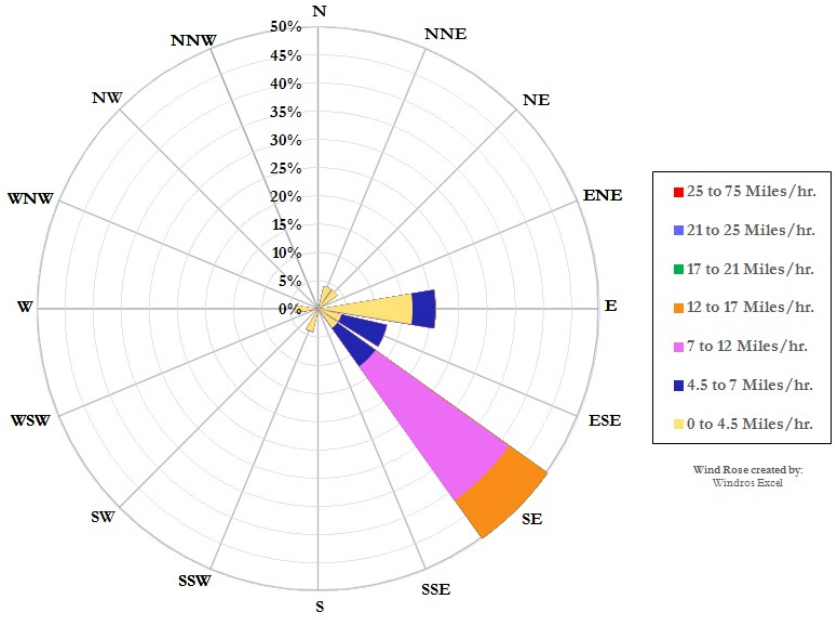


Figs. B-6 & B-7: Calexico meteorological data for August 9 shows a distinct SE-SSE direction. Wind data from the EPA's AQS data bank.

FIGURE B-8
EL CENTRO (9TH St)
WIND SPEED & DIRECTION



FIGURES B-9
EL CENTRO (9TH ST) WIND ROSE – AUGUST 9



Figs. B-8 & B-9: El Centro station meteorological data for August 9 shows a distinct southeast direction. Wind data from the EPA's AQS data bank.

FIGURE B-10
NILAND (ENGLISH RD)
WIND SPEED & DIRECTION

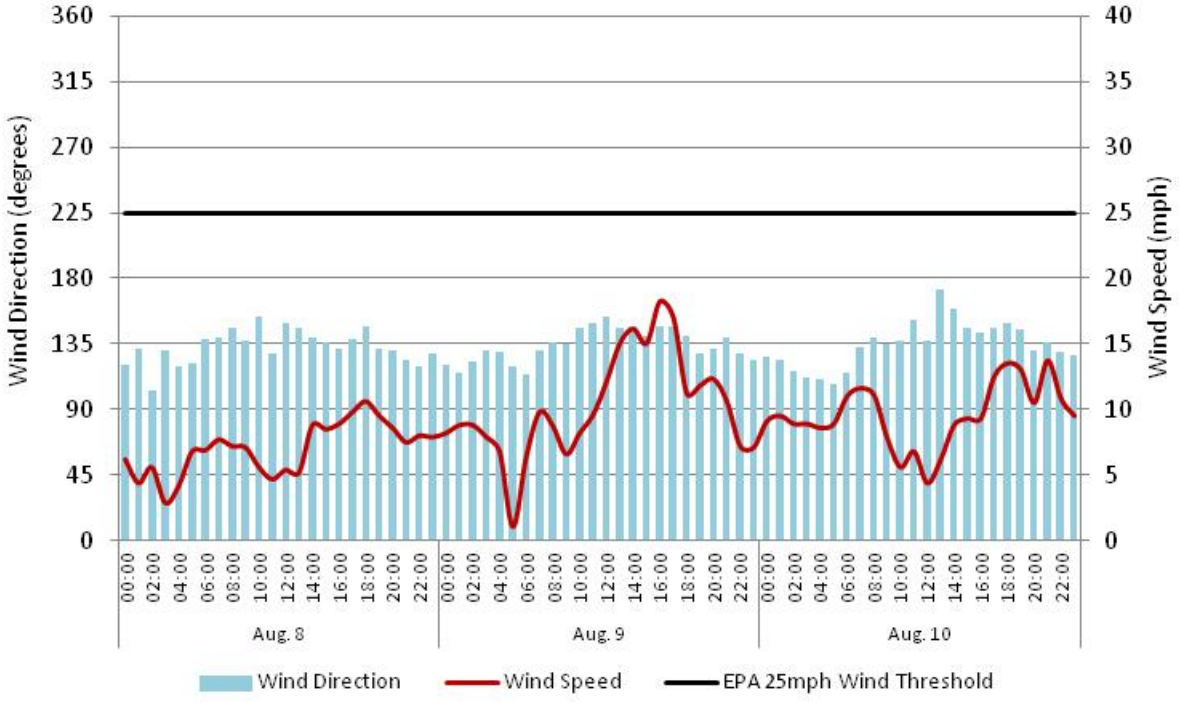
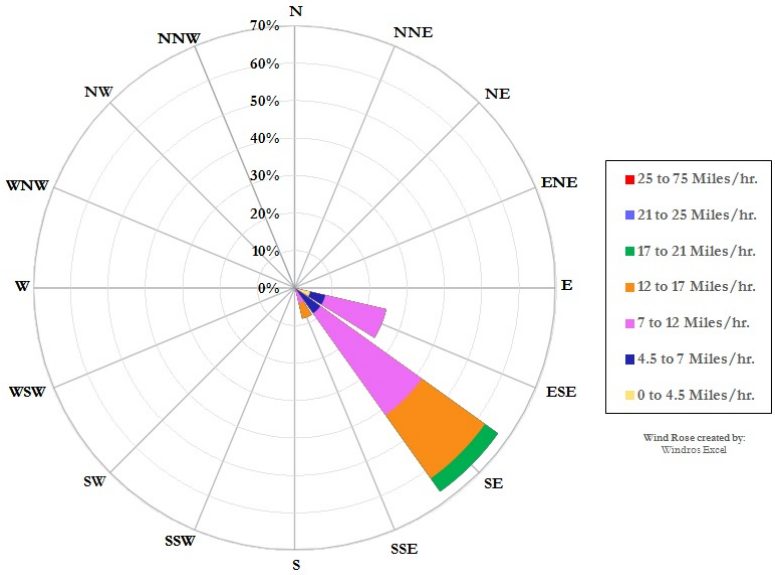


FIGURE B-11
NILAND (ENGLISH RD) WINDROSE – AUGUST 9



Figs. B-10 & B-11: Niland wind data for August 9 shows a distinct southeast direction. Wind data from the EPA's AQS data bank.

FIGURE B-12
WESTMORLAND
WIND SPEED & DIRECTION

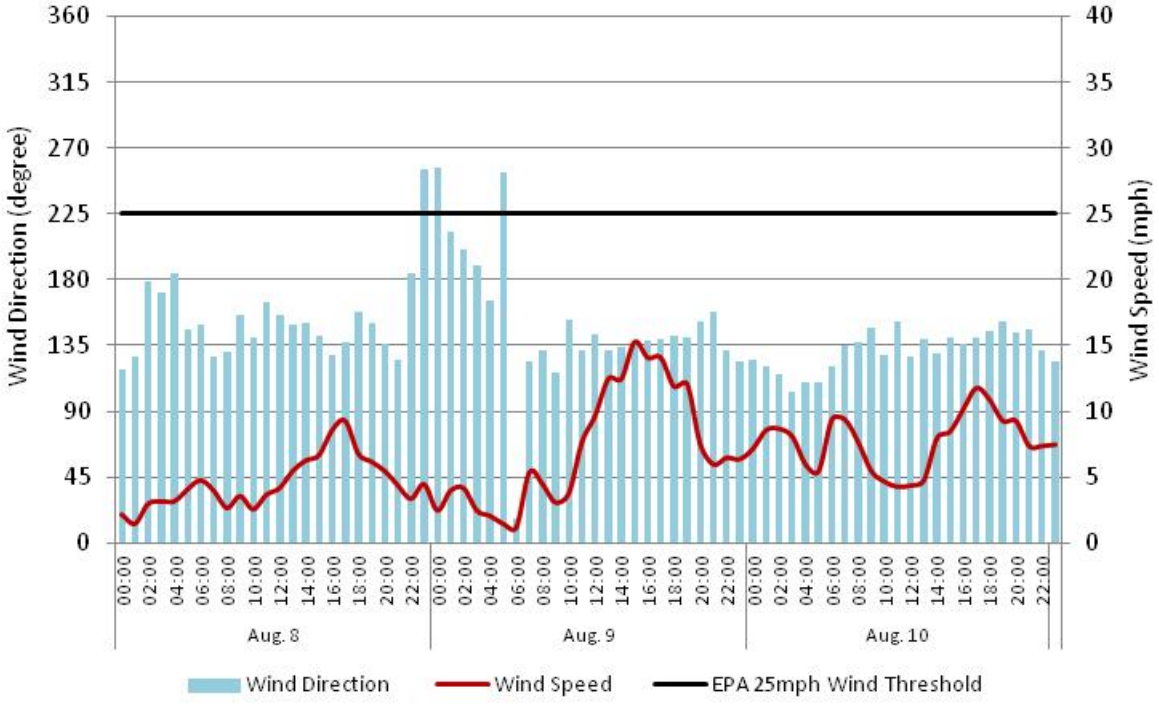
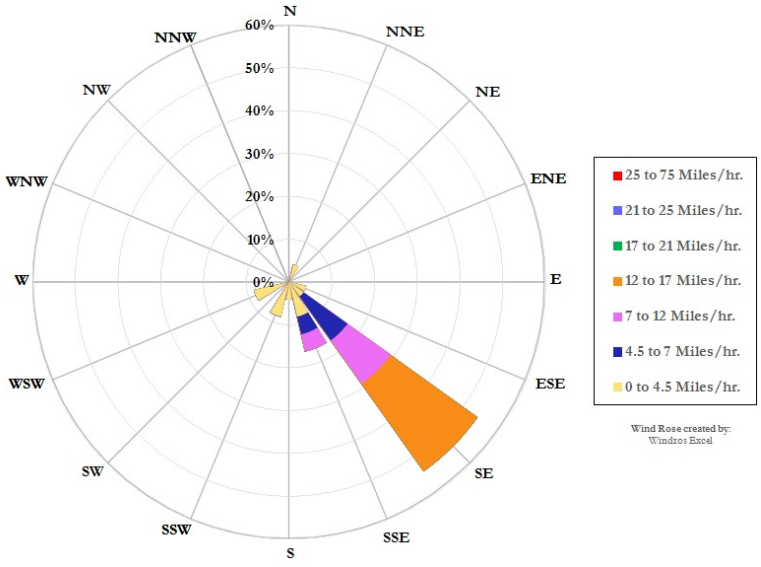


FIGURE B-13
WESTMORLAND WINDROSE – AUGUST 9



Figs. B-12 & B-13: Westmorland station meteorological data for August 9 shows a distinct southeast direction. Wind data from the EPA's AQS data bank.

EASTERN RIVERSIDE COUNTY SITES

FIGURE B-14
BLYTHE AIRPORT (KBLH)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

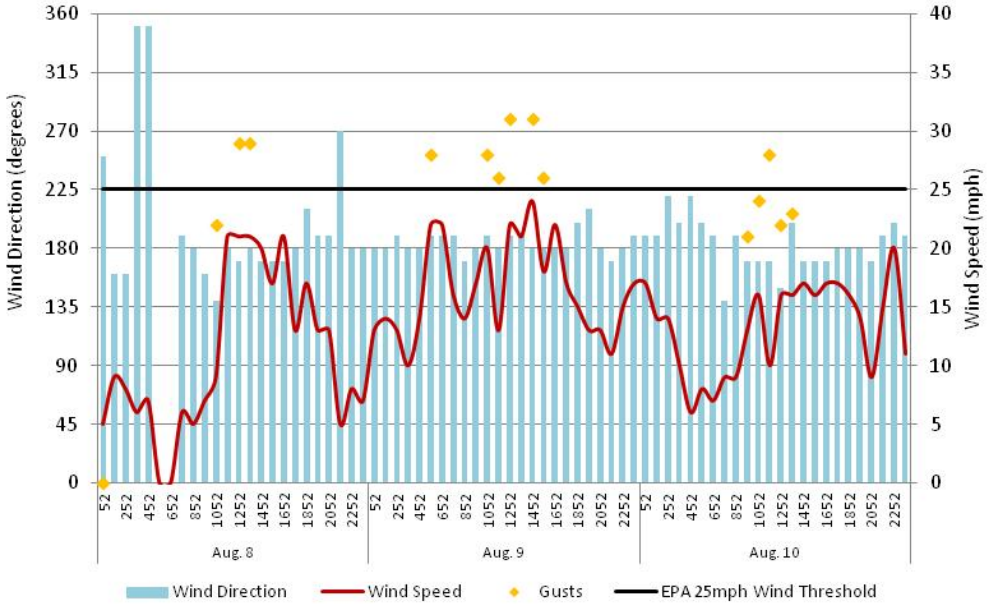


Fig. B-14: Wind data from the NCEI's QCLCD system.

FIGURE B-15
JACQUELINE COCHRAN REGIONAL AIRPORT (KTRM)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

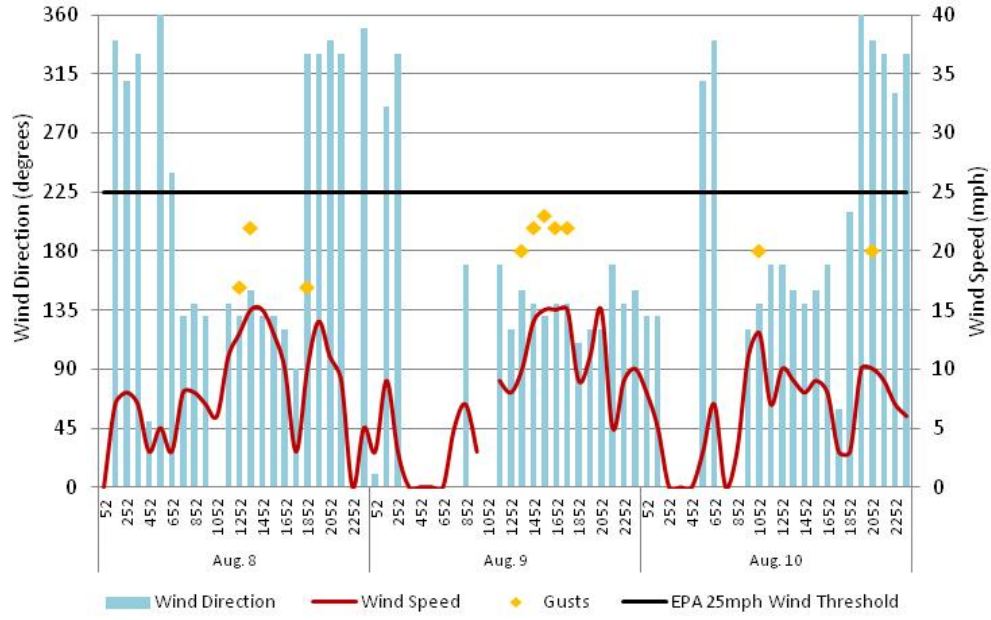


Fig. B-15: Wind data from the NCEI's QCLCD system.

FIGURE B-16
PALM SPRINGS INTERNATIONAL AIRPORT (KPSP)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

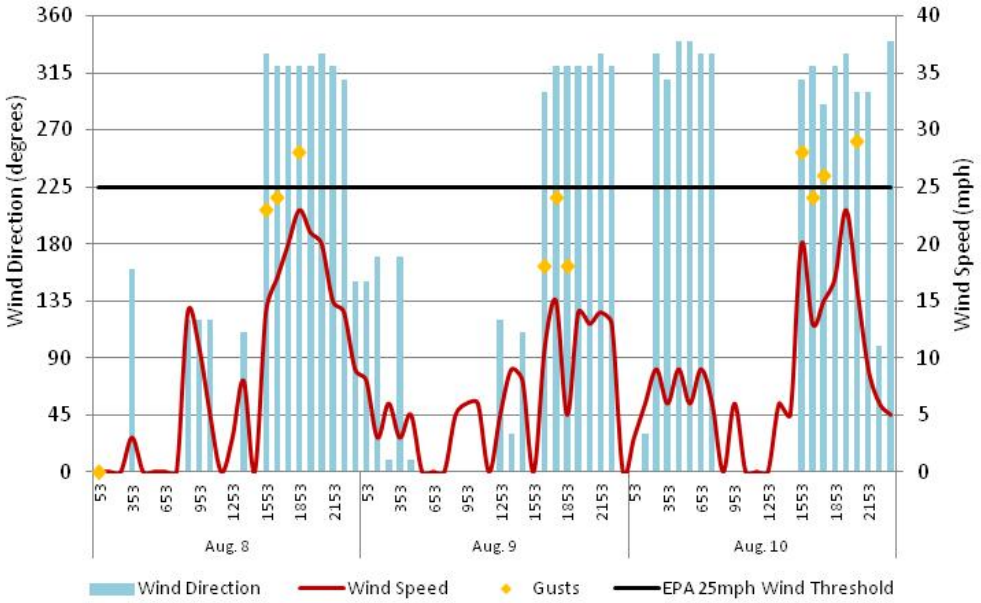


Fig. B-16: Wind data from the NCEI's QCLCD system.

SOUTHEAST SAN DIEGO COUNTY

FIGURE B-17
CAMPO AIRFIELD (KCZZ)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

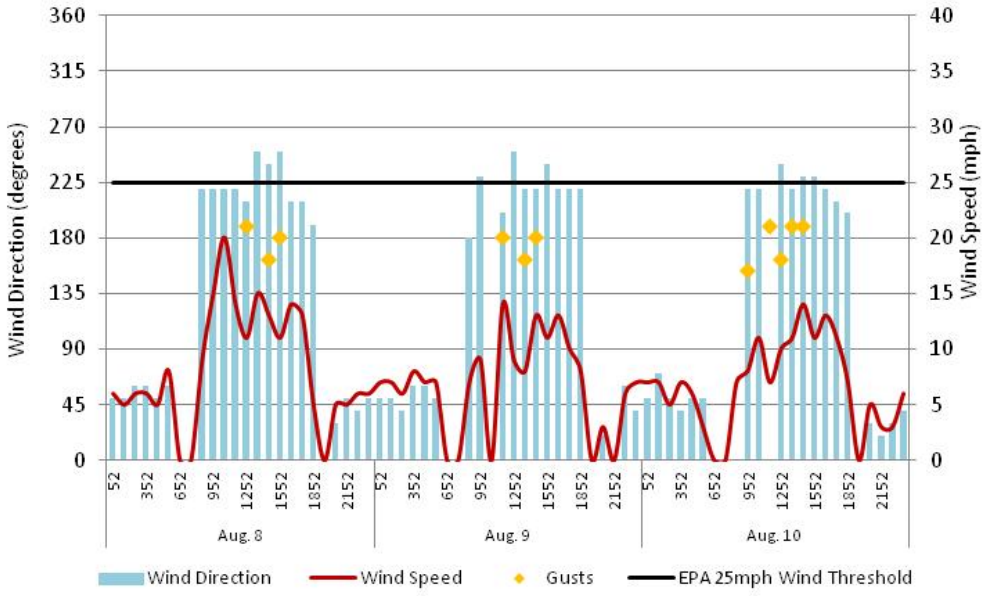


Fig. B-17: Wind data from the NCEI's QCLCD system.

UPSTREAM WIND SITES

The following sites were upstream from Imperial County during the July 30 wind event.

SOUTHWESTERN ARIZONA

FIGURE B-18
YUMA MCAS (KNYL)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

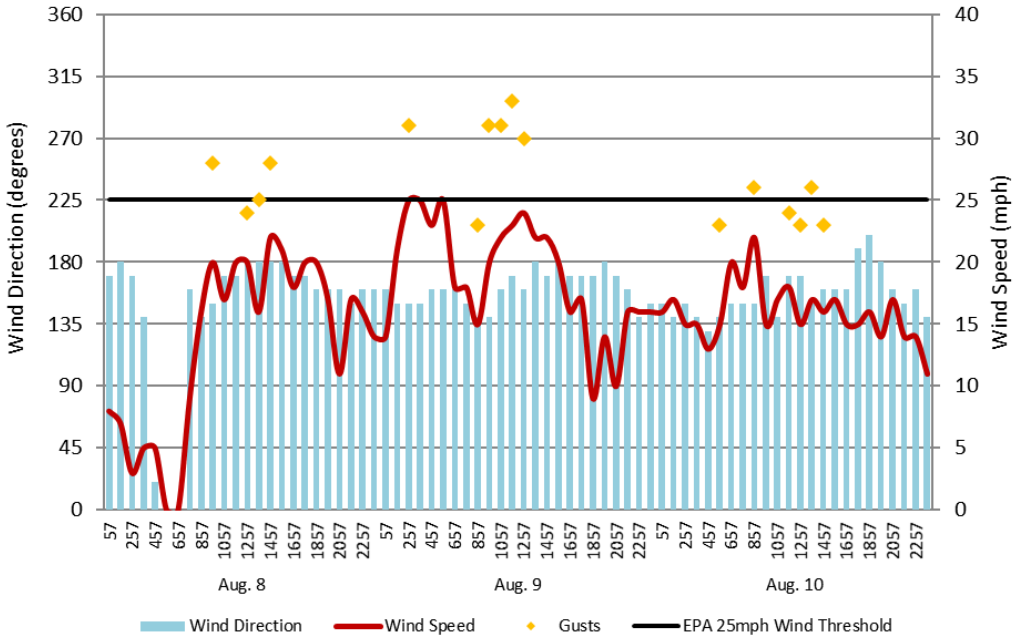
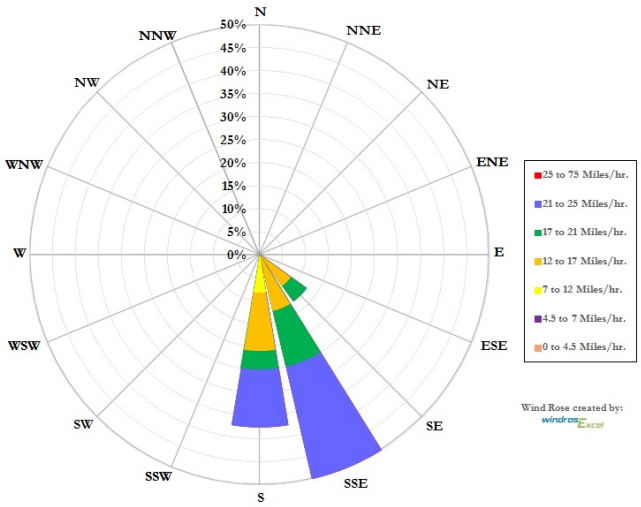


FIGURE B-19
YUMA MCAS WIND ROSE – AUGUST 9



Figs. B-18 &B-19: Yuma MCAS (KNYL) had winds of 25 mph along with gusts of 33 mph. Winds were strong from the SSE and S. Data from the NCEI QCLCD system.

MEXICO

FIGURE B-20
SAN LUIS COLORADO, MEXICO
WIND SPEED (AVERAGES), GUSTS & DIRECTION

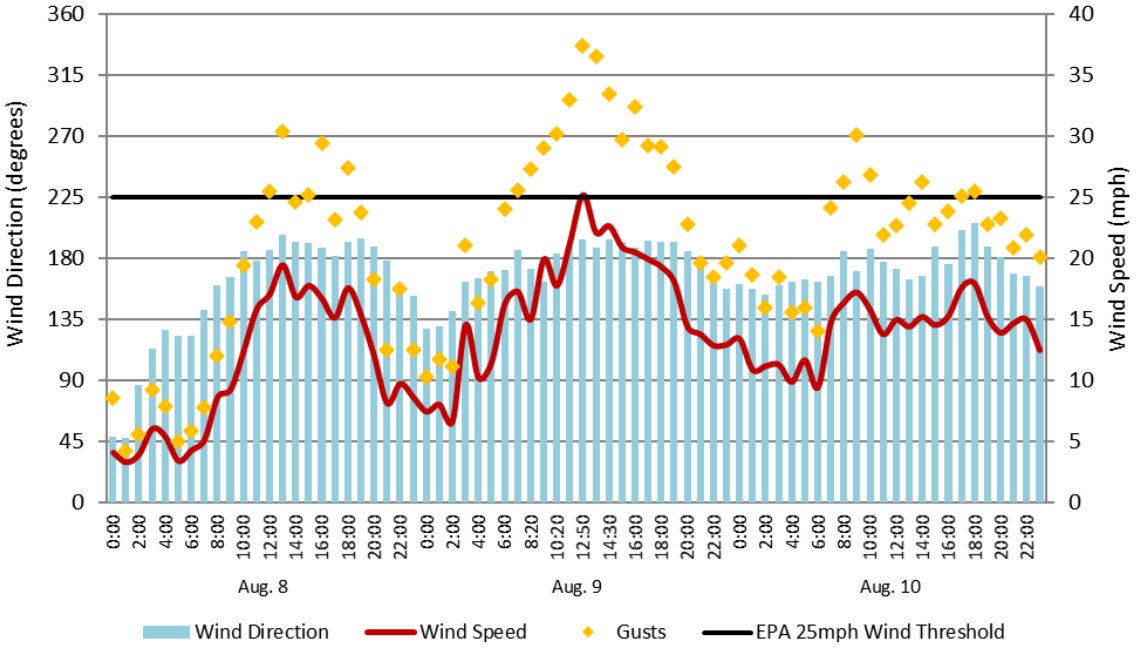
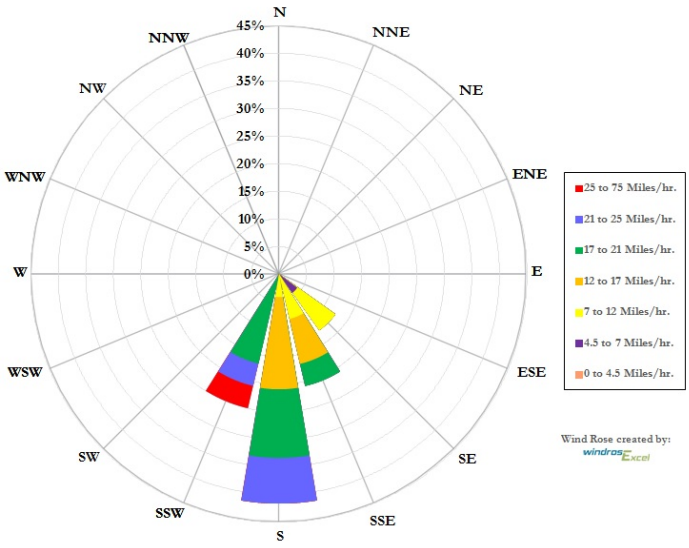


FIGURE B-21
SAN LUIS COLORADO, MEXICO WIND ROSE – AUGUST 9



Figs. B-20 & B-21: San Luis Colorado, Mexico (Station ID: SLRS6) had winds of 25 mph. Gusts were 37 mph. Data from the University of Utah's MesoWest.

FIGURE B-22
MEXICALI, MEXICO INTERNATIONAL AIRPORT (MMML)
WIND SPEED (AVERAGES), GUSTS & DIRECTION

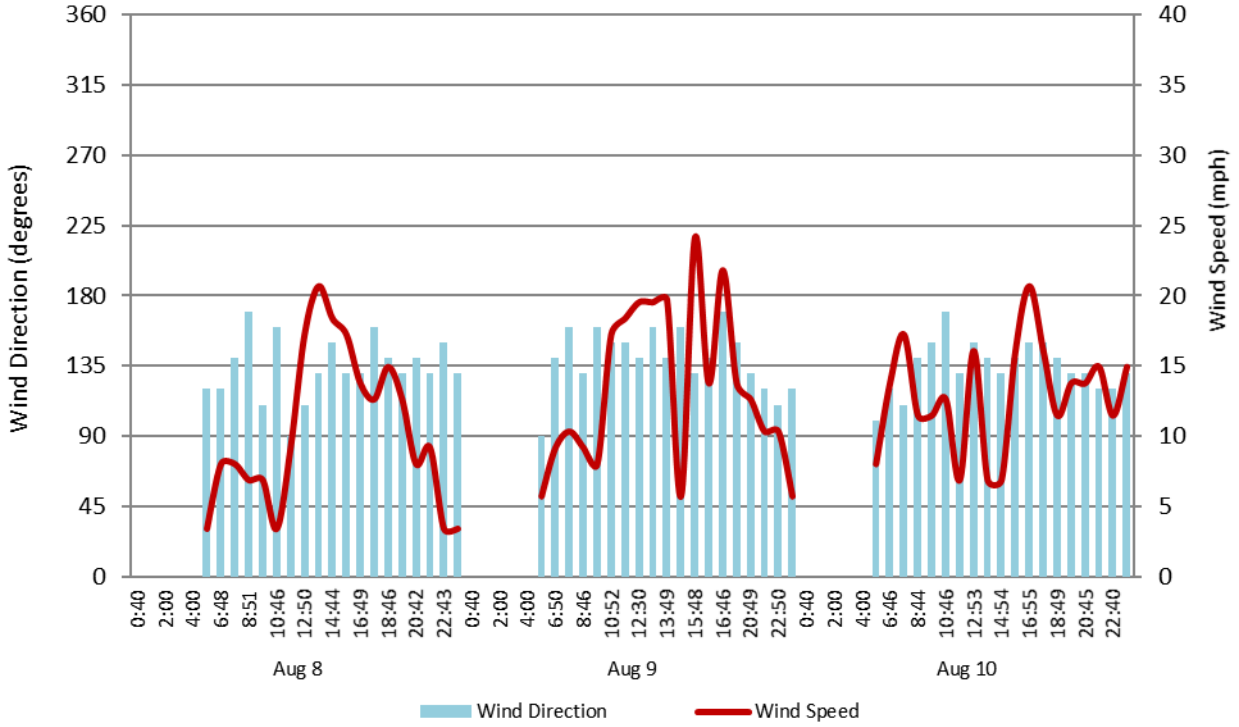
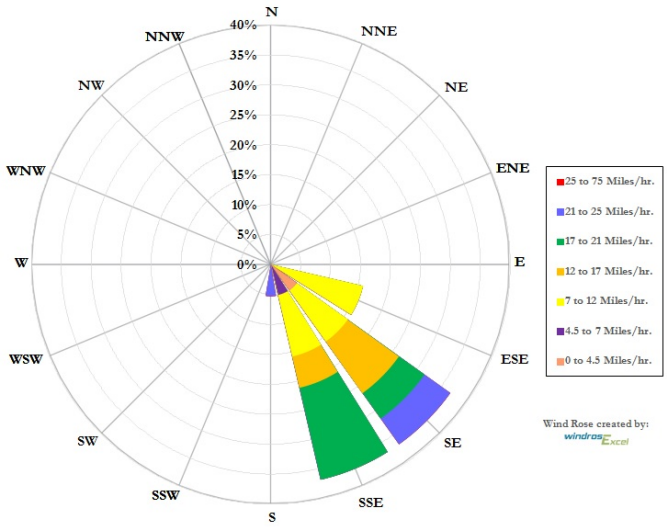


FIGURE B-23
MEXICALI INTERNATIONAL AIRPORT (MMML) WIND ROSE – AUGUST 9



Figs. B-22 & B-23: Mexicali Airport in Mexico did not have winds of 25 mph but did have several observations of blowing dust. The airport does not report gusts. Data from the University of Utah's MesoWest.

FIGURE B-24
IMPERIAL COUNTY AIRPORT (KIPL) QCLCD – AUGUST 9

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Elev: -58 ft. Lat: 32.8342° N Lon: -115.5786° W
Station: **IMPERIAL CO AIRPORT, CA US WBAN:03144**

Local Climatological Data
Hourly Observations
August 2016
Generated on 06/21/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Time (LST)	Station Type	Sky Conditions	Visibility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press. Tend	Net 3-Hr Change (inHg)	Sea Level Press. (inHg)	Report Type	Precip Total (in)	Altimeter Setting (inHg)
					AU | AW | MW	(F)	(C)	(F)	(C)	(F)	(C)											
09	0053	7	CLR:00	10.00		86	30.0	79	26.1	41	5.0	20	3	VRB		29.71	8	+0.00	29.65	FM-15	0.00	29.65
09	0153	7	CLR:00	10.00		83	28.3	73	22.7	64	17.8	53	6	110		29.72			29.66	FM-15	0.00	29.66
09	0253	7	CLR:00	10.00		82	27.8	74	23.4	70	21.1	67	7	080		29.73			29.67	FM-15	0.00	29.67
09	0353	7	CLR:00	10.00		82	27.8	74	23.4	70	21.1	67	0	000		29.75	3	-0.04	29.69	FM-15	0.00	29.69
09	0453	7	CLR:00	10.00		76	24.4	67	19.2	57	13.9	52	0	000		29.77			29.71	FM-15	0.00	29.71
09	0553	7	CLR:00	10.00		83	28.3	76	24.2	72	22.2	70	6	080		29.78			29.72	FM-15	0.00	29.72
09	0653	7	CLR:00	10.00		88	31.1	79	26.2	75	23.9	66	9	110		29.80	1	-0.05	29.74	FM-15	0.00	29.74
09	0753	6	CLR:00	10.00		90	32.2	80	26.8	75	23.9	62	6	130		29.79			29.74	FM-15	0.00	29.73
09	0853	7	CLR:00	10.00		93	33.9	82	27.5	73	22.8	52	3	VRB		29.79			29.74	FM-15	0.00	29.73
09	0953	7	CLR:00	10.00		97	36.1	84	29.1	70	21.1	42	7	VRB		29.80	5	+0.00	29.74	FM-15	0.00	29.74
09	1053	7	CLR:00	10.00		100	37.8	88	30.9	67	19.4	34	9	150	20	29.79			29.73	FM-15	0.00	29.73
09	1153	7	CLR:00	10.00		104	40.0	93	33.8	65	18.3	28	17	150	24	29.78			29.72	FM-15	0.00	29.72
09	1253	7	BKN:07 36	5.00	HZ:7 |FU:05 |HZ:05	106	41.1	96	35.5	64	17.8	26	22	150	30	29.76	8	+0.04	29.70	FM-15	0.00	29.70
09	1310	7	BKN:07 31 OVC:08 39	2.00V	HZ:7 |FU:05 |HZ:05	105	40.6	93	33.9	68	20.0	30	25	120	32	29.75				FM-16		29.69
09	1320	7	BKN:07 31 OVC:08 40	4.00	HZ:7 |FU:05 |HZ:05	105	40.6	93	33.9	68	20.0	30	24	140	31	29.75				FM-16		29.69
09	1329	7	BKN:07 29 OVC:08 38	3.00	HZ:7 |FU:05 |HZ:05	105	40.6	93	34.1	67	19.4	29	20	120	31	29.74				FM-16		29.68
09	1351	6	BKN:07 30 OVC:08 36	5.00	HZ:7 ||HZ:05	106	41.0	96	35.5	64	18.0	26	22	130	30	29.74				FM-16		29.68
09	1353	7	BKN:07 30 OVC:08 36	5.00	HZ:7 |FU:05 |HZ:05	105	40.6	94	34.5	65	18.3	27	22	120	30	29.74			29.68	FM-15	0.00	29.68
09	1453	7	OVC:08 34	5.00	HZ:7 |FU:05 |HZ:05	105	40.6	96	35.6	61	16.1	24	23	140		29.72			29.66	FM-15	0.00	29.66
09	1536	7	BKN:07 28 OVC:08 38	2.50	HZ:7 |FU:05 |HZ:05	104	40.0	94	34.3	63	17.2	26	28	140	34	29.71				FM-16		29.65
09	1553	7	OVC:08 28	2.50	HZ:7 |FU:05 |HZ:05	104	40.0	93	33.8	65	18.3	28	25	140	32	29.71	8	+0.03	29.65	FM-15	0.00	29.65
09	1601	7	BKN:07 28 OVC:08 37	3.00	HZ:7 |FU:05 |HZ:05	103	39.4	92	33.3	64	17.8	28	28	140	34	29.70				FM-16		29.64
09	1605	7	BKN:07 30 OVC:08 37	2.50V	HZ:7 |FU:05 |HZ:05	103	39.4	92	33.5	63	17.2	27	26	140	34	29.70				FM-16		29.64
09	1617	7	OVC:08 35	4.00	HZ:7 |FU:05 |HZ:05	103	39.4	93	33.8	62	16.7	26	26	140		29.70				FM-16		29.64
09	1653	7	BKN:07 45	5.00	HZ:7 |FU:05 |HZ:05	102	38.9	91	32.8	63	17.2	28	25	140	32	29.70			29.64	FM-15	0.00	29.64
09	1753	7	CLR:00	10.00		99	37.2	87	30.6	64	17.8	32	22	140	26	29.70			29.64	FM-15	0.00	29.64
09	1853	7	CLR:00	10.00		96	35.6	84	28.8	64	17.8	35	17	140		29.71	3	-0.00	29.65	FM-15	0.00	29.65
09	1953	7	CLR:00	10.00		94	34.4	82	27.6	68	20.0	43	16	150		29.73			29.67	FM-15	0.00	29.67
09	2053	7	CLR:00	10.00		92	33.3	80	26.9	71	21.7	51	10	140		29.76			29.70	FM-15	0.00	29.70
09	2153	7	CLR:00	10.00		90	32.2	80	26.6	74	23.3	59	11	130		29.77	1	-0.06	29.71	FM-15	0.00	29.71
09	2253	7	CLR:00	10.00		88	31.1	80	26.8	77	25.0	70	5	120		29.79			29.73	FM-15	0.00	29.73
09	2353	7	CLR:00	10.00		87	30.6	80	26.9	78	25.6	75	7	140		29.80			29.74	FM-15	0.00	29.74

FIGURE B-25
EL CENTRO NAF (KNJK) QCLCD – AUGUST 9

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Elev: -42 ft. Lat: 32.8167° N Lon: -115.6833° W
Station: **EL CENTRO NAF, CA US WBAN:23199**

Local Climatological Data
Hourly Observations
August 2016
Generated on 06/21/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Time (LST)	Station Type	Sky Conditions	Visibility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press. Tend	Net 3-Hr Change (inHg)	Sea Level Press. (inHg)	Report Type	Precip Total (in)	Altimeter Setting (inHg)
					AU | AW | MW	(F)	(C)	(F)	(C)	(F)	(C)											
09	0056	7	CLR:00	10.00		84	28.9	80	26.8	33	0.6	16	7	280		29.71	8	+0.00	29.71	FM-15	0.00	29.67
09	0156	7	CLR:00	10.00		75	23.9	65	18.4	44	6.7	33	0	000		29.72			29.72	FM-15	0.00	29.68
09	0256	7	CLR:00	10.00		75	23.9	65	18.4	44	6.7	33	0	000		29.74			29.74	FM-15	0.00	29.70
09	0356	7	CLR:00	10.00		77	25.0	67	19.3	50	10.0	39	0	000		29.75	3	-0.04	29.75	FM-15	0.00	29.71
09	0456	7	CLR:00	10.00		74	23.3	64	17.8	49	9.4	41	0	000		29.78			29.78	FM-15	0.00	29.74
09	0556	7	CLR:00	10.00		79	26.1	70	21.1	63	17.2	58	6	320		29.79			29.79	FM-15	0.00	29.75
09	0656	7	CLR:00	10.00		86	30.0	77	24.8	71	21.7	61	5	040		29.80	1	-0.05	29.80	FM-15	0.00	29.76
09	0756	6	CLR:00	10.00		88	31.1	78	25.4	71	21.7	57	5	VRB		29.80			29.80	FM-15	0.00	29.76
09	0856	7	CLR:00	10.00		92	33.3	80	26.8	70	21.1	49	0	000		29.80			29.80	FM-15	0.00	29.76
09	0956	7	CLR:00	10.00		95	35.0	83	28.1	67	19.4	40	5	350		29.80	7	+0.00	29.80	FM-15	0.00	29.76
09	1056	7	CLR:00	10.00		99	37.2	87	30.6	64	17.8	32	9	140		29.79			29.80	FM-15	0.00	29.75
09	1156	7	CLR:00	10.00		101	38.3	91	32.5	61	16.1	27	8	210		29.77			29.78	FM-15	0.00	29.73
09	1256	7	FEW:02 80	8.00		103	39.4	94	34.3	60	15.6	24	9	130	24	29.75	8	+0.04	29.76	FM-15	0.00	29.71
09	1313	7	FEW:02 80	8.00		103	39.4	95	34.8	58	14.4	23	9	120		29.75				FM-16		29.71
09	1340	6	CLR:00	3.00		104	40.0	94	34.5	62	16.7	25	18	140	25	29.73				FM-16		29.69
09	1356	7	CLR:00	2.00	DU:5 |DU:07	104	40.0	95	34.8	61	16.1	24	15	140	28	29.73			29.74	FM-15	T	29.69
09	1446	7	CLR:00	2.50	DU:5 |DU:07	104	40.0	96	35.7	58	14.4	22	22	120		29.71				FM-16		29.67
09	1456	7	CLR:00	2.00	DU:5 |DU:07	104	40.0	97	36.0	57	13.9	21	23	130		29.71			29.72	FM-15	0.00	29.67
09	1556	7	CLR:00	2.00	DU:5 |DU:07	103	39.4	95	34.8	58	14.4	23	23	130		29.71	6	+0.05	29.71	FM-15	0.00	29.67
09	1656	7	CLR:00	2.00	DU:5 |DU:07	101	38.3	92	33.3	58	14.4	24	24	130	31	29.70			29.70	FM-15	0.00	29.66
09	1717	7	CLR:00	4.00	DU:5 |DU:07	100	37.8	90	32.0	60	15.6	27	23	130		29.70				FM-16		29.66
09	1756	7	FEW:02 50	5.00	DU:5 |DU:07	98	36.7	87	30.8	59	15.0	27	21	130		29.70			29.70	FM-15	0.00	29.66
09	1856	7	CLR:00	8.00		94	34.4	82	27.9	61	16.1	33	17	140		29.71	3	-0.00	29.71	FM-15	0.00	29.67
09	1956	7	CLR:00	10.00		92	33.3	80	26.6	64	17.8	40	16	150		29.74			29.74	FM-15	T	29.70
09	2056	7	CLR:00	10.00		90	32.2	78	25.8	67	19.4	47	8	160		29.76			29.77	FM-15	0.00	29.72
09	2156	7	CLR:00	10.00		89	31.7	78	25.3	67	19.4	48	0	000		29.78	1	-0.02	29.78	FM-15	0.00	29.74
09	2256	7	CLR:00	10.00		86	30.0	76	24.4	69	20.6	57	6	050		29.79			29.80	FM-15	0.00	29.75
09	2356	7	CLR:00	10.00		85	29.4	77	25.2	74	23.3	70	8	100		29.80			29.80	FM-15	0.00	29.76

FIGURE B-26
YUMA, AZ MCAS (KNYL) QCLCD – AUGUST 9

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service
Elev: 213 ft. Lat: 32.6500° N Lon: -114.6167° W
Station: **YUMA MCAS, AZ US WBAN:03145**

Local Climatological Data
Hourly Observations
August 2016
Generated on 06/21/2017

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Date	Time (LST)	Station Type	Sky Conditions	Visibility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press. Tend	Net 3-Hr Change (inHg)	Sea Level Press. (inHg)	Report Type	Precip Total (in)	Altimeter Setting (inHg)
					AU | AW | MW	(F)	(C)	(F)	(C)	(F)	(C)											
09	0057	6	CLR:00	10.00		87	30.6	78	25.7	74	23.3	65	14	160		29.45			29.67	FM-15	0.00	29.68
09	0157	6	CLR:00	10.00		86	30.0	78	25.7	75	23.9	70	14	160		29.45	1	-0.01	29.67	FM-15	0.00	29.68
09	0257	6	CLR:00	10.00		86	30.0	79	26.0	76	24.4	72	21	150		29.46			29.67	FM-15	0.00	29.69
09	0357	6	CLR:00	10.00		85	29.4	79	26.1	77	25.0	77	25	150	31	29.47			29.69	FM-15	0.00	29.70
09	0457	6	CLR:00	10.00		84	28.9	79	26.3	78	25.6	82	25	150		29.48	2	-0.02	29.69	FM-15	0.00	29.71
09	0557	6	FEW:02 80 FEW:02 120	10.00		85	29.4	80	26.5	78	25.6	80	23	160		29.51			29.72	FM-15	0.00	29.74
09	0657	6	FEW:02 100	6.00	DU:5 |FU:04	86	30.0	79	26.3	77	25.0	75	25	160		29.52			29.74	FM-15	0.00	29.75
09	0757	6	FEW:02 100	5.00	DU:5 |FU:04	89	31.7	80	26.7	76	24.4	65	18	160		29.53	1	-0.06	29.75	FM-15	0.00	29.76
09	0857	6	SCT:04 100	10.00	DU:5 |FU:04	91	32.8	81	27.1	75	23.9	59	18	150		29.54			29.75	FM-15	0.00	29.77
09	0957	6	SCT:04 100	10.00		94	34.4	82	27.7	71	21.7	48	15	140	23	29.55			29.77	FM-15	0.00	29.78
09	1057	6	FEW:02 100	10.00		97	36.1	84	29.1	68	20.0	39	20	140	31	29.55	1	-0.02	29.77	FM-15	0.00	29.78
09	1157	6	SCT:04 100	10.00		99	37.2	86	30.1	71	21.7	41	22	160	31	29.55			29.76	FM-15	0.00	29.78
09	1257	6	FEW:02 100	6.00	DU:5 |FU:04	101	38.3	89	31.5	67	19.4	33	23	170	33	29.54			29.75	FM-15	0.00	29.77
09	1357	6	FEW:02 100	4.00	DU:5 |FU:04	102	38.9	90	32.4	65	18.3	30	24	160	30	29.52	8	+0.03	29.74	FM-15	0.00	29.75
09	1457	6	CLR:00	5.00	DU:5 |FU:04	103	39.4	92	33.5	63	17.2	27	22	180		29.50			29.71	FM-15	0.00	29.73
09	1557	6	CLR:00	5.00	DU:5 |FU:04	103	39.4	92	33.3	64	17.8	28	22	170		29.47			29.69	FM-15	0.00	29.70
09	1657	6	CLR:00	6.00	DU:5 |FU:04	102	38.9	90	32.4	65	18.3	30	20	180		29.46	6	+0.06	29.68	FM-15	0.00	29.69
09	1757	6	CLR:00	10.00		100	37.8	88	31.0	66	18.9	33	16	170		29.45			29.67	FM-15	0.00	29.68
09	1857	6	CLR:00	10.00		97	36.1	85	29.2	66	18.9	36	17	170		29.46			29.67	FM-15	0.00	29.69
09	1957	6	CLR:00	10.00		95	35.0	83	28.1	68	20.0	41	9	170		29.47	3	-0.01	29.69	FM-15	0.00	29.70
09	2057	6	CLR:00	10.00		90	32.2	80	26.4	73	22.8	58	14	180		29.50			29.72	FM-15	0.00	29.73
09	2157	6	CLR:00	10.00		88	31.1	78	25.8	73	22.8	61	10	170		29.53			29.74	FM-15	0.00	29.76
09	2257	6	CLR:00	10.00		87	30.6	78	25.7	74	23.3	65	16	160		29.53	1	-0.05	29.74	FM-15	0.00	29.76
09	2357	6	CLR:00	10.00		86	30.0	78	25.7	75	23.9	70	16	140		29.54			29.75	FM-15	0.00	29.77